

Exhibit H

MINUTES OF MEETING
ON
PROPOSED PCB EFFLUENT STANDARDS
February 28, 1974

Monsanto Company
St. Louis, Mo.

0036921

Chairman: Mr. W. B. Papageorge
Manager, Product Acceptability
Monsanto Industrial Chemicals Co.

Objective:

The purpose of the meeting was to share information, experiences and impressions to help each of the participating companies in taking appropriate actions which are mutually supportive and effective in persuading the Administration of EPA to modify the proposed PCB Effluent Standard.

0036922

PARTICIPANTS

PCB STANDARDS MEETING

February 28, 1974

CERTIFIED BALLAST MANUFACTURERS

Mr. N. R. Clark Universal Manufacturing Co.

E.I.A.

Mr. Arnold S. Doty	P. R. Mallory & Co., Inc.
Dr. E. M. Moore	Electrical Utilities Co.
Mr. Rudy Carlson	Electrical Utilities Co.

GENERAL ELECTRIC COMPANY

Mr. James S. Nelson
Mr. Stuart Richel
Dr. Edward L. Simons

JARD COMPANY, INC.

Mr. Richard Rollins

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

Mr. A. M. Salazar

WESTINGHOUSE CORPORATION

Mr. H. Sheppard
Mr. N. H. Smith

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MONSANTO COMPANY

P. G. Benignus	Market Manager
H. S. Bergen	Business Director
D. B. Hosmer	Utilities and Environmental Protection Director
R. H. Munch	Senior Science Fellow
W. B. Papageorge	Manager, Product Acceptability
W. W. Withers	Attorney
C. Paton	Product Manager
W. R. Richard	Manager, Research and Development
J. R. Savage	Manager, Manufacturing
E. S. Tucker	Research Group Leader
P. L. Wright	Manager, Toxicology

0036924

AGENDA

PCB EFFLUENT STANDARDS MEETING

February 28, 1974

- | | |
|------------|---|
| 9:00 AM | 1. Welcome - H. S. Bergen |
| 9:10 AM | 2. Introductory Remarks - W. B. Papageorge |
| | a. Brief Review of Proposed Standard |
| | b. Critical Action Dates |
| | c. Objectives of Meeting |
| | 3. Discussion Topics |
| 9:15 AM | a. PCB Characteristics - Realistic Definition
chemical, physical, biodegradation |
| 9:45 AM | b. Sampling and Analytical Methodology |
| 10:15 AM | Break |
| 10:30 AM | c. Toxicity
Acute
Chronic |
| 11:30 AM | d. Bioaccumulation - Biomagnification |
| 12:00 Noon | e. Dilution - Stream Size |
| 12:30 PM | Lunch |
| 1:15 PM | f. Proposed Effluent Standard |
| 2:00 PM | g. Control at Manufacturing and Use Sites
Current losses
Background |
| 2:45 PM | Break |
| 3:00 PM | h. Economic Considerations |
| 3:30 PM | i. Action Plans |
| 4:00 PM | Adjourn |

0036925

MINUTES OF PCB EFFLUENT STANDARDS MEETING

1. Mr. Howard S. Bergen, Jr., Director, Specialty Products Business Group of Monsanto Industrial Chemicals Company, welcomed the participants.

2. Introduction - W. B. Papageorge

Mr. Papageorge summarized the timetable past and future on toxic pollutants:

- July 6, 1973 - Toxic Pollutants list published
- September 7, 1973 - Final toxic pollutants list published including PCBs and 8 other chemical classes (e.g. cyanide, mercury, DDT, cadmium, etc.)
- December 27, 1973 - Proposed Effluent Standards published
- January 18, 1974 - Filing date for status as participant at proposed EPA Hearing on Standards
- January 25, 1974 - (i) Prehearing Conference with EPA
 - (ii) NEMA, Monsanto, G.E. and Westinghouse recognized as participants.
 - (iii) A total of 38 objectors expressed an interest. They represented industry or trade associations with the exception of the Michigan Water Research Commission and two powerful environmental groups (Environmental Defense Fund and National Resources Defense Council).
 - (iv) Presiding officer made it clear that Hearings will be strictly for cross-examination of participants' testimonies in affidavit form only.

- March 15, 1974 - Written testimony by 38 objectors to be submitted in affidavit form.
- April 8, 1974 - Hearings open for cross-examination and rebuttal evidence. CN⁻/Cd/Hg - first three. PCBs are 7th (third from last).
- Mid-May, 1974 - Hearings completed. (Evenings/week-ends may be used.)
- June 25, 1974 - Final standards published - effective in one year.

It should be noted that others who are affected by these standards can still comment by March 25 to:

Dr. C. Hugh Thompson,
Chairman-Hazardous and Toxic Substances
Regulation Task Force
Office of Water Protection Agency,
Environmental Protection Agency
Washington D. C. 20460

Industry representatives still wishing to comment and who need more background information can contact any of the industry participants (see attached list) or Mr. W. B. Papageorge of Monsanto (314-694-4051).

Mr. Richel (G.E.):

- (i) Made a plea for greater industry participation. Comments can still be made up to March 25 with sound excuse for tardiness.
- (ii) EPA at January 25 prehearing Conference were reluctant to expose themselves to cross-examination. Dr. Hugh Thompson to be available for cross-examination at Hearings.
- (iii) Many objectors had common interest (e.g. environmentalists). EPA suggested a common counsel for this group.
- (iv) On each of first 3 pollutants, EPA would offer 2 witnesses.

Mr. Doty (P.R. Mallory) asked about bearing of economic factors on standards.

Mr. Richel (G.E.) stated:

- (i) Law is clear-economic factors are not relevant in establishing standards.
- (ii) EPA is somewhat of a split personality on this. The

Presiding Officer at the Prehearing Conference ruled that economics are relevant. NRDC (National Resources Defense Council) objected and was over-ruled.

- (111) Industry can and should therefore introduce relevant economic data. EPA would be wise not to expressly refer to such data in the published standard otherwise NRDC could go to court and EPA over-ruled.

Department of Commerce

It was pointed out that Sidney R. Gallier, Deputy Assistant Secretary for Environmental Affairs at the Department of Commerce wrote Monsanto on January 15 asking their views on the proposed effluent standards. Copies of Dr. Gallier's letter and Monsanto's response were circulated at the meeting. Industry should contact the Dept. of Commerce. Their legal counsel (Mr. Morland) has been active on the side of industry in other environmental hearings.

Mr. Salazar (NEMA) pointed out that the PCB Task Force had recommended a standard for PCBs of 0.01 ppb in the main body of water. (EPA was a member of that task force). ANSI C-119 proposes to use this Task Force recommendation and print this as a standard of 0.01 ppb in main body of water.

Mr. Sheppard (Westinghouse) queried if plant effluent standards could be set to meet 0.01 ppb.

Dr. Simons (G.E.) said this implied an acceptance of ANSI C-119 by industry.

There seemed to be some doubt on this.

PCB Characteristics

Dr. Tucker (Monsanto) presented hand-outs on:

- (a) Monsanto's proposed definition of PCBs
- (b) Comments on EPA's proposed analytical methodology
- (c) Monsanto's pre-publication paper on biodegradation of PCBs.

(a) Definition of PCBs

1-4 chlorobiphenyls do not have long residence time. PCBs up to tetrachlorobiphenyl are not of concern on environmental persistence or biomagnification.

Dr. Tucker proposed the following definition:

"Polychlorinated biphenyls (PCBs) means materials containing the biphenyl group which is chlorinated and which have been shown to persist and rapidly bioaccumulate in the aquatic environment. These chlorinated biphenyls are identified as those components having gas chromatographic retention times greater than 54, relative to p, p-DDE = 100, under the standard conditions recommended in the EPA PCB test method."

Mr. Sheppard (Westinghouse) said Monsanto's proposed definition was relevant to persistence but was it relevant for standards directed toward toxic materials? Are persistent materials non-toxic?

Mr. Wright (Monsanto) stated the proposed effluent standard had two parts:

- (i) acute limits directed to toxicity of materials and specifically limits PCB concentrations on that basis.
- (ii) daily load in effluent - based solely on bio-magnification (relevant to persistence).

Dr. Simons (G.E.) pointed out that section 307-A of the proposed standard refers to persistence as being a critical factor to be considered.

Dr. Tucker (Monsanto) stated we were badly hurt if all PCBs are regarded as persistent and if biomagnification factors of 200,000 are used. Researchers other than Monsanto have found bacterial degradation of PCBs and that PCBs have been found to undergo metabolism in both avian and mammalian animals.

Mr. Nelson (G.E.) asked if proposed PCB definition would exclude Aroclor 1016.

Dr. Tucker (Monsanto) Aroclor 1016 would be excluded for the most part (98.9% is lower than pentachlorobiphenyl). Aroclor 1242 would be excluded to 65% or better. Aroclor 1254 however would not be excluded.

Mr. Papageorge (Monsanto) pointed out that of the factors listed as being critical in determining which pollutants made the EPA list of 9/7/73 only biomagnification appeared relevant to PCBs.

Dr. Simons (G.E.) agreed.

Mr. Wright (Monsanto) stated that an acute toxicological level is defined in the EPA Basis & Purpose document as ≤ 10 ppm (96 hour LC-50). He also believes that differences in toxicity among PCBs are minor until chlorinated as high as Aroclor 1260.

Mr. Nelson (G.E.) stated that words should be used in a discourse on definition to properly screen us on acute toxicity.

In reference to a comment that Aroclor 1254 would not be excluded by the proposed definition, Dr. Tucker (Monsanto) offered the opinion that transformer fluids were easier to recover than capacitors.

(b) Analytical Methodology

Dr. Tucker (Monsanto) stated the EPA's proposed method for PCB analysis was being submitted to ASTM. He thought the method was well written and capable of detection to ppt (parts per trillion) but it was untried and the quantitative accuracy is in question. The method was not submitted for round-robin testing before EPA adopted it. Monsanto has found that by spiking distilled water with 500,000 ppt or 500 ppb of PCBs we get values for PCB that vary by $\pm 55\%$. The EPA, however, claims a capability of detecting absolute values at 50 ppt. The EPA method ignores interfering substances.

Mr. Clark (Universal Manufacturing) said that with a proposed upper limit for PCB discharge of 0.0648 lb./day the sensitivity of the analytical method would vary "all over the lot" depending on the size of the water "reservoir" into which the PCBs discharge.

Mr. Sheppard (Westinghouse) commented that if the analytical techniques on determining PCB levels are so difficult, how valid are the determination of toxic values for PCBs.

Mr. Clark (Universal Manufacturing) asked if analytical techniques differentiate between different chlorine levels. Dr. Tucker (Monsanto) said it would depend on the PCB mixture. Aroclor 1242 could probably be identified quantitatively in a mixture with Aroclor 1260 but addition of Aroclor 1254 to the mixture would prevent identification because Aroclor 1254 contains PCB homologs that overlap both Aroclor 1242 and 1260.

Dr. Munch (Monsanto) said that the proposed EPA method does not use high resolution and hence handicaps identification of individual peaks.

Dr. Simons (G.E.) mentioned that after EPA set automotive emission standards (NIOX) the analytical methodology was found faulty and the standards were delayed. In this case, EPA is not setting the effluent standard on analytical methodology but

on factors such as toxicity and persistence. The methodology is relevant in enforcement and monitoring. This then leads to the possible argument that the effluent standard is correct and justified on the basis of toxicology et al, but is not enforceable due to lack of an accurate method for absolute value determination of PCB discharge.

Mr. Richel (G.E.) pointed out that EPA won't buy an answer to that argument which seeks to raise the effluent standard to a level that can be accurately measured. Mr. Savage (Monsanto) felt strongly, however, that this dilemma needed to be in the record. Others agreed.

Dr. Tucker (Monsanto) said ASTM would hold a round-robin on the EPA method and that Monsanto would participate. He will send the name of the ASTM contact to the participants so that they can decide if they want to join the round-robin test.

Mr. Sheppard (Westinghouse) said he was not prepared to accept that the proposed EPA method for determining quantities and types of PCB in samples and animals was accurate enough so that toxic limits could be defined on the basis of PCB levels of questionable accuracy.

Toxicity

Mr. Hosmer (Monsanto) stated that the original EPA publication on Water Quality Criteria came from a publication by McKee and Wolfe for the State of California. The McKee/Wolfe volume was well done and EPA did not change much of it. There is now a new 2-volume EPA edition extracted from the work of 10 committees of the National Academy of Sciences.

The toxicity of PCBs is related to salmon egg studies and Monsanto doubts the validity of this. Monsanto has made their feelings known to Dr. Thompson of EPA but he thought the criteria were sound. Since then Russell Train has been sued by NRDC and other groups on the grounds that the toxic pollutants list is not long enough and the proposed standards are too lenient.

Mr. Wright (Monsanto) went through the rationale used by EPA in arriving at a PCB discharge maximum of 0.0648 lb./day. He also showed how the standard could be changed and yet be consistent with published data on PCBs. Details follow.

(a) FDA set arbitrary proposed tolerances:

- 5 ppm in fish for human consumption
- 5 ppm in components for animal feed
- 0.5 ppm in complete animal feed

(b) Monsanto would not disagree with these tolerances.

(c) FDA has presented - acute toxicity limits (point sources)
- chronic toxicity limits (daily load)

Acute toxicity limits:

96 hour LC-50 studies for PCBs show:

~280 ppb in fresh water (bluegill)

~10 ppb in coastal or seawater (pink shrimp/oysters)

Published data based on materials leaving an outlet and going into a body of water. Acute limits have no direct relation to chronic limits.

Chronic toxicity limits:

The EPA equation is:

Chronic limit X water flow rate X safety factor = gm/day discharge

In Marine organisms the chronic limit is set as

$$\frac{0.5 \text{ ppm}}{30,000} = 0.0167 \text{ ppb}$$

In fresh water the chronic limit has been determined by using 0.5 ppm as toxic limit for salmon eggs and a 200,000 bio-magnification factor. This gives a chronic limit of

$$\frac{0.5}{200,000} = 0.0025 \text{ ppb}$$

The biomagnification level of 200,000 is based on unpublished data from Stalling & Meyer (Fish Pesticide Lab, U. S. Dept. of Interior, Columbia, Mo.). Dr. Simons said that in response to repeated requests by G.E. to the Columbia Lab the only reference they have been given is a Stalling & Meyer paper presented in Carolina in 1971 and which contains no mention of a 200,000 factor. Mr. Wright (Monsanto) stated he has seen only one literature reference to an accumulation factor of ~200,000 and that was in the hepato pancreas of a pink shrimp. If the PCB level was calculated on the basis of the total shrimp then the accumulation factor was only 22,000. Other references give accumulation factors of 1000-75,000 for whole tissues of various fresh water organisms. Accordingly, Mr. Wright proposes that a biomagnification factor of 30,000 and not 200,000 be used. He also proposes that we retain the chronic limit of 0.5 ppm without debating the salmon egg issue.

This would lead to a discharge level for PCBs:

$$\frac{0.5}{30,000} \times 10,000 \times 0.5 \times 5.4 = 0.459 \text{ lb./day}$$

Handwritten: $\frac{0.5}{2000} \times 189 \text{ m} \times \text{---} \times 5.4 = \text{---}$ into lb./day 243#/day

This compares to the proposed standard of 0.0648 lb./day. *Handwritten:* $\frac{0.459}{6} = 0.0765$

The safety factor comes from the EPA's Basis and Purpose document supporting the proposed effluent standards. It is supposed to take account of non-point sources of PCBs and is the same as 6 of the 9 toxic pollutants proposed for EPA standards. Monsanto's Medical Department feels this safety factor is arbitrary and confers no real toxicological benefit. If deleted, the revised Wright PCB discharge level would be 0.918 lb./day.

One of the most critical parts of the discharge equation is the water flow rate. A significant number of dielectric PCB manufacturers have plants on rivers where the flow rate is under 100 cfs or 1% of the EPA cut-off flow of 10,000 cfs. Several plants discharge into sewage plants which in turn have treated liquid flowing into rivers or streams with very low flow rates. For a river with 100 cfs flow the EPA maximum discharge would drop to 0.000648 lb./day or 0.162 lb. in a 250 work-day year. Even a revised standard of 0.918 lb./day at 10,000 cfs would only be 0.00918 lb./day at 100 cfs or ~2.3 lb. per 250 work-day year. Clearly this is a staggering target to have to meet.

Mr. Doty (Mallory) pointed out that in the present language of the EPA standards municipal sewage systems are not considered point sources.

Mr. Richel (G.E.) was of the opinion that where a plant discharged into a sewage system without treatment and hence into navigable waters the plant could have to comply with effluent standards on toxic pollutants. Mr. Papageorge (Monsanto) felt we should not be complacent and regard discharge to sewage plants being the answer to problems. Mr. Hosmer (Monsanto) stated that 10,000 cfs represents the largest flow the EPA will consider on the grounds that all industry would move to the largest river. The opposite of that argument is that it encourages small plants on every stream in the country.

Mr. Sheppard (Westinghouse) raised the issue of sedimentation. Since it appears that all the experiments to establish toxic values were run without sediment effects being considered, the real-life values were questioned. PCBs attach themselves to sediment. Furthermore the sediment moves down river and so PCB would be dispersed from the point source. It was pointed out by Dr. Richard (Monsanto) that Aroclor 1254 is soluble in water up to 50 ppb and that in time partitioning between sediment and

water could take place. Mr. Wright (Monsanto) agreed that the discharge limits were extreme cases in the absence of sediment considerations and this was worth study and incorporation into arguments against the proposed levels.

Dr. Simons (G.E.) queried whether we were correct in concentrating our attacks on the criterion of toxic effects of mammals eating fish and ignoring the possible argument that fish per se must be protected. Mr. Wright (Monsanto) said the proposed standard says both. In salt water, standards are proposed that would protect the species that eat organisms containing PCB. In fresh water, if 0.5 ppm in salmon eggs correlates with <5 ppm in salmon then we are protecting salmon. He also said that the chronic limits and biomagnification limits he was proposing would protect the species themselves. We should, however, beware of arguing for higher levels in fish because we could draw EPA and FDA into conflict. The FDA levels in food, fish etc., are temporary tolerances and any arguments against their validity could lead to a reduction in these tolerances.

Mr. Savage (Monsanto) queried whether raising the level in organisms could cause possible danger to predators.

Dr. Simons (G.E.) quoted from page 39 of the Basis & Purposes document which states that the body burdens of birds and mammals should not increase over present levels. Page 51 of the same document cites a Nat. Acad. Sci. report which gives 2.0 ppm PCB as tolerable level in flesh of whole fish. $\frac{2.0}{200,000} = 0.1 \text{ ppm PCB}$

is given as tolerable level in water divided by a safety factor of 5 to give a maximum PCB concentration in water of 0.002 ppm. Thus EPA accepted 2 ppm PCB level in fish but got to water concentration of 0.002 ppm by using a high level of 200,000 for biomagnification and an arbitrary factor of 5.

If we were to revise the proposed EPA standard by:

- (i) using 2.0 ppm as chronic limit in fresh water species instead of 0.5 ppm;
- (ii) substituting 30,000 instead of 200,000 for biomagnification factor;
- and
- (iii) ignoring safety factor of 0.5

then the maximum permissible discharge in lb. PCB per day would be:

$$\frac{2.0}{30,000} \times 10,000 \times 5.4 \approx 3.6 \text{ lb.}$$

For the plant situation on a river with a flow of only 100 cfs the discharge would be 0.036 lb/day or 9.0 lb. per 250 work-day year. These levels are still far below the 5 lb./day given in ANSI C-107.

It is therefore apparent that other aspects of PCBs must be highlighted in order to get away from PCB discharge levels as low as even our "revised" proposals.

Aspects to concentrate on are:

- (1) Definition of PCBs that excludes biodegradable homologs.

This could exclude 90% or better of Aroclor 1016 and 65% or better of Aroclor 1242. On that basis, discharge levels would be as follows:

PCB Type	Stream Flow (cfs)	Discharge (lb.PCB equivalent/day)		
		EPA	Wright	Simons/Wright
Any PCB	10,000	0.0648	0.918	3.6
Any PCB	100	0.000648	0.00918	0.036
Aroclor 1016	10,000	0.648	9.18	36.0
Aroclor 1016	100	0.00648	0.0918	0.36
Aroclor 1242	10,000	0.194	2.75	10.8
Aroclor 1242	100	0.0019	0.027	0.10

- (2) Try to change stream flows from the present value of the flow rate in cubic feet per second (cfs) expressed as the probable low rate occurring during a 7 consecutive day period once in 10 years at the effluent point.

If the average flow rate over a period of time (to be agreed on) was used, the lowest flow rate in the equation could conceivably be raised by a factor of 10 from 100 to 1000. In the Simons/Wright version for a standard the Aroclor 1016 discharge could be raised to 3.6 lb./day at 1000 cfs flow and Aroclor 1242 to 1.0 lb./day at 1000 cfs flow.

- (3) Magnitude of PCB Point-Sources

It is possible that EPA and environmentalists are totally misinformed on the number of plants still using PCBs. In the U.S. today there are:

1 PCB manufacturing plant

~18 capacitor plants using PCB

~27 transformer manufacturing plants using PCB

In the past there were probably 1500-2500* plants using PCBs. Only 2-3% of these plants continue to use PCB today.

* (Subject to closer checking if necessary)

In the past ~97% of plants using PCBs purchased ~40 million pounds of PCB per year. Monsanto's PCB sales policy has therefore

- reduced number of using plants to ~2-3% of previous total.
- eliminated ~40M lbs. PCB sales per year.

The EPA standard would limit PCB discharge per plant to 0.0648 lb./day or ~3.2 lb./day across the U.S. (~50 plants). This equates to ~800 pounds in a 250 work-day year. Since fish have survived throughout the 40+ years that PCBs have been produced and widely used, the standard proposed by EPA seems far too drastic.

Turning again to the Simons/Wright proposal we can estimate the effect in terms of annual PCB discharge into water across the U.S. at 1000 cfs:

Discharge As	Discharge (lb./day)	No. Plants	US Total per 250 days (pounds)	As Persistent PCBs		
				Discharge (lb./day)	No. Plants	US Total
Any PCB	3.6	*1	900	1.2	1	300
Aroclor 1016	3.6	18	16200	0.36	18	1620
Aroclor 1242	1.08	4	1080	0.36	4	360
Aroclor 1254	0.36	23	2070	0.36	23	2070
			20,250			
						4350

* Plant is on river in excess of 10,000 cfs.

Using this technique an argument can be made in favor of the ANSI C-107 proposal of 5.0 lb./day.

Proposed Effluent Standards

Dr. Simons (G.E.) summarized the points he felt had to be dealt with in trying to change the proposed standard:

1. Higher persistence of higher PCBs versus alleged lower acute toxicity
2. Background levels of PCBs
3. Written testimony of participants and correlation

Toxicity

EPA Basis & Purpose document (page 50) states that 96 hour LC-50 to fish cannot adequately measure toxicity of PCB. Where is time demarcation between acute and chronic. Chronic effects can be either lethal or non-lethal.

Why are PCBs on the list on toxic grounds?

LD-50 for PCB is such that it is not considered toxic to humans.

For protection of aquatic life the Nat. Aca. Sci. set a 96 hour LC-50 of 10 ppm or less.

In proposing a definition for PCBs, Dr. Simons (G.E.) felt we should stress:

- (a) lack of persistence of homologs below tetra-chlorobiphenyl.
- (b) chronic toxicity does not arise for the lower homologs because they are non-persistent.
- (c) ignore acute toxicity - no real differences between Aroclor 1016, 1242 and 1254.

Participants need to consider: Do we have the best definition?

In the tentative EPA analytical method we should take note that in the table on p.3-22, the percentage of PCB was not controlled.

Mr. Carlson (E.U.C.) pointed out that in its present form the standard could saddle present PCB users with all other discontinued uses. Dr. Richard (Monsanto) pointed out that FDA and Boxboard Manufacturer's Association had agreed on a protocol that protected recycle paper users from just such a situation. Mr. Bergen (Monsanto) asked that copies be circulated to participants.

We need to word our definitions to exclude residuals. Participants should exchange proposed drafts on wording regarding residuals by March 7.

G. E. stated we should not approach the hearing on the basis that things can't be done. Rather take the proposed standard and point out what it means in real life. In G.E.'s case they use X M lb./year and yet can't lost 0.5 drops per day. Stream flow rates make the matter worse. This is a point on which Dr. Thompson should be cross-examined.

Of the participants present, 5 plants discharge into sewers with outlets into rivers (very small except in 2 cases). Three plants discharge into small rivers.

No one at the meeting could cope with the EPA standard as it is proposed. Only Jard expressed an opinion on what level they could live with. (Jard stated 27 lb. Aroclor 1016 per day. This would be 2.7 lb. PCB by our proposed definition.)

Participation at EPA Hearing

Definite participation: Monsanto
G. E.
Westinghouse

Undecided: Electrical Utilities
Jard
NEMA

No participation: Electronic Components
Mallory

Objectors of record could adopt non-responding company as witness.

G.E.'s testimony will fall into the following areas:

- Explanation of why PCBs are used
- Consequences of ban on customers
- Inadequacy of EPA/Nat. Acad. Sci. statements
- How standards would apply to G.E.
- Inadequacies of the Standard
 - definition
 - methodology
 - logic behind the standard

Other contributory actions:

- Involve Federal Energy Office (e.g. Aerovox letter on motor-run capacitor contribution to ease energy crisis.)
- Involve F.E.O./other agencies along lines of petrochemical producers' PEG report.
- Power Systems Group of IEEE will circulate a position paper on PCBs (technical aspects) in the dielectric industry to Congress, EPA, FEO and Dept. of Commerce (target date: April).

Action Plans

1. (W. B. Papageorge) Circulate to participants copies of FDA/Boxboard Manufacturers protocol on PCBs in recycle paper.
2. (Participants) Exchange drafts on testimony regarding PCB residuals/background levels with each other by March 7.
(Monsanto contact should be W. B. Papageorge.)
3. (Participants) Submit to W. B. Papageorge their thoughts on proposed PCB definition (to exclude 1-4 chlorine homologs).
4. (Participants) Communicate with each other on how best to handle sedimentation phenomenon (as raised by Mr. Sheppard of Westinghouse).
5. (E. S. Tucker) Send out name of ASTM contact for participation in round-robin on proposed EPA analytical method.
6. (Participants) Write to Dr. Galler of Commerce Dept. opposing EPA standards.
(See Galler letter to Monsanto and Monsanto response.)
7. (Participants) Those who have not responded to EPA can still write Dr. Thompson by March 25.
8. (A. Salazar, NEMA) (a) Get feedback from Sangamo/McGraw Edison on the proposed standards.
(b) Determine role NEMA will take on affidavits/testimony at EPA hearing.
9. (W. B. Papageorge) Obtain PEG report and send to Mr. Nelson (G.E.).
10. (Participants) Involve F.E.O. in EPA Hearing along lines of Aerovox letter to Secretary Simon.

Monsanto

FROM (NAME & LOCATION) C. Paton - B2SC

DATE September 12, 1974

SUBJECT

REFERENCE

T • D. R. Hansen - 1800
 D. L. Mellon - 1010
 H. R. Ford - 1070
 P. L. Slayton - 1650

cc: T. L. Gossage
 P. G. Benignus
 D. Wood
 W. R. Richard

J. G. Bryant
 W. D. Lubic
 R. H. Munch
 W. B. Papageorge

Status of dielectric symposium attendance as of September 11:

Organization	Attending	Declined	No Reply
1. Aerovox	Hutzler Kalstein Sadler	Tuttle	
2. ASTM			
3. Axel			Zweig
4. Capacitor Specialists	Hayworth		Steinbarger
5. Carolina Capacitor	Wershey		
6. Cornell-Dublier	Todd (St. Louis)	Robinson Hurd	
7. E.U.C.	R. Hauser A. O. Hauser (S) R. Carlson	Moore	Sampo
8. Electronic Components	Clark (S) Rayno		DiJacomo
9. Filtron			Milton
10. G.E. - Rome	Kinney	Dutton Mays Frahm Crowe Ostoff	
11. G.E. - Pittsfield	Raab (S)	Hart	Lichiello
12. G.E. - Hudson Falls	Pozefsky (S)	Scoville Barker Price Stenger Klingebiel Hopkins	McKenzie
13. High Energy	Buss		Nay
14. Hevi-Duty			Frey
15. McGraw-Edison	Willy	Draeger	Hammer
16. Jard	Rollins (S)	Arsenault Paquin	
17. Mallory-Waynesboro	Vaught		
18. Mallory-Indianapolis	Shoot Van Buskirk Wilson Doty	Moss	Schock Baker
19. Maxwell	Sevigny Hoffman		Ferranti Fortunis
20. NEMA			Salazar

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	<u>Organization</u>	<u>Attending</u>	<u>Declined</u>	<u>No Reply</u>
21.	Niagara Transformer	Courtade	Gabel	Darby
22.	R. F. Interonics			Lasky
23.	Research-Cottrell			Rubin
				Johnson
				Sellman
				Weida
24.	St. Regis Paper	Myers		
25.	Sangamo	Butner	McGee	Hydrick
26.	P. F. Schweitzer	Bullwinkel		Selke
27.	Sprague	Sears	Davis	
			Ross	
			Vail	
			Carpenter	
28.	Stevens Paper			Schoales
29.	Universal Voltronics			Polis
30.	R. E. Uptegraf	Uptegraf		
31.	Van Tran		Bolin	
			Tindall	
32.	Westinghouse	McClaim	Mercier	Kelly
	(Bloomington)	Schoaff	Pickett	
			Zimmerman	
33.	Westinghouse	Dakin	Gainer	
	(Pittsburgh)			
34.	Westinghouse	Sheppard	Ford	
	(Sharon)	Sloat		
35.	Westinghouse		Keiser	
	(South Boston)		Wilburn	
36.	York Capacitor			Dubilier
				LaGreca
37.	Dings			Nahey
38.	Doble Engineering			Lowe
39.	Energy Systems			Rutledge
				Pugh
40.	Essex Electro Eng.			Tompson
41.	H. K. Porter			Kellogg
42.	Standard Transformer			Auzenne
43.	Teledyne	Emanuel		Saunders
		Power		
44.	Electro Engineering			Jones
45.	Helena Corp.	Wheler		Thallner
46.	Sanders Associates			Rankin
47.	Kuhlman			Dell
				Smelko

In addition Bob Abbe of G. E. Schenectady will be here for the dinner if not for the symposium. All will attend the dinner except:

Wershey (Carolina Capacitors)
 Schoaff (Westinghouse)
 Emanuel (Teledyne)
 Power (Teledyne)

0108620

-3-

We have 7 acceptances from outside the U.S. so far - 5 from Canada, 1 from Mexico and 1 from Sweden.

Unless we hear from the following by Friday, September 13, we should call the following important invited delegates:

<u>Customer</u>	<u>Name</u>	<u>Responsibility</u>
Hevi-Duty	J. Nay	HRF
NEMA	A. Salazar	CP
Research-Cottrell	Johnson	PLS
	Sollman	
	Waida	
Niagara Transformer*	Darby	DLM
Stevens Paper	Schoales	CP
York Capacitor	Dubilier	PLS
	LaGreca	
Doble Engrg.	Lowe	CP
Standard Transformer	Auzenna	DRH
Helena Corp.	Thallner	HRF
Kuhlman*	Dell	HRF
	Smelko	

*Invitations mailed 9/10/74 so could delay phone call till 9/16/74.



C. Paton

/cc

0108621

Monsanto

MONSANTO INDUSTRIAL CHEMICALS CO.
800 N. Lindbergh Boulevard
St. Louis, Missouri 63166
Phone: (314) 694-1000

September 12, 1974

Mr. Lyle E. Shoot
P. R. Mallory
3029 East Washington Street
Indianapolis, IN 46201

Dear Mr. Shoot:

Thank you very much for your reply to Mr. Bergen's invitation to the Dielectrics Symposium to be held at the Sheraton West Port Inn, St. Louis on September 23, 1974. We are very pleased that you can attend.

In accordance with your reply we note that you will be making your own arrangements and do not require accommodations at the Sheraton West Port.

The schedule of events for the Symposium on September 23 is as follows:

7:00 a.m.:	Buffet Breakfast	Basel Room
8:30 a.m.:	Symposium	Geneva Room
12:30 p.m.:	Lunch	Basel Room
1:30 p.m.	Symposium	Geneva Room
4:30-5:00 p.m.:	Symposium ends	
6:30 p.m.:	Symposium Cocktail Party	Zurich Room

For those attending the Testimonial Dinner for Paul Benignus, a pre-dinner cocktail party will be held at 6:30 p.m. in the Zurich Room of the West Port Inn. The dinner will be at 7:30 p.m. in the Geneva Room.

For your convenience, we will operate a message center from 8:00 a.m. to 5:30 p.m. on September 23 at the Sheraton West Port. The telephone number is 314 878-1500.

There has been some interest expressed in a tour of Monsanto's dielectric facilities on September 24. For those interested we will organize tours of our research laboratories in St. Louis as well as of our manufacturing plant at Sauget, Illinois. The latter tour may benefit those of you interested in pollution control on PCBs. We will announce details of these tours at the Symposium. We would expect these tours to terminate in time for you to leave St. Louis on late afternoon flights on September 24.

Continued on next page

0108640

Monsanto

MONSANTO INDUSTRIAL CHEMICALS CO.
800 N. Lindbergh Boulevard
St. Louis, Missouri 63166
Phone: (314) 894-1000

September 12, 1974

Dr. Donald G. Wilson
P. R. Mallory & Co. Inc.
P. O. Box 706
Indianapolis, IN 46206

Dear Dr. Wilson:

Thank you very much for your reply to Mr. Bergen's invitation to the Dielectrics Symposium to be held at the Sheraton West Port Inn, St. Louis on September 23, 1974. We are very pleased that you can attend.

In accordance with your reply we note that you will be making your own arrangements and do not require accommodations at the Sheraton West Port.

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Continued on next page

Monsanto

MONSANTO INDUSTRIAL CHEMICALS CO.
800 N. Lindbergh Boulevard
St. Louis, Missouri 63166
Phone: (314) 694-1000

September 12, 1974

Mr. Mark Van Buskirk
P. R. Mallory
P. O. Box 372
Indianapolis, IN 46206

Dear Mr. Van Buskirk:

Thank you very much for your reply to Mr. Bergen's invitation to the Dielectrics Symposium to be held at the Sheraton West Port Inn, St. Louis on September 23, 1974. We are very pleased that you can attend.

In accordance with your reply we note that you will be making your own arrangements and do not require accommodations at the Sheraton West Port.

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Continued on next page

0108643

MonsantoFROM (NAME & LOCATION) **D. Wood - St. Louis (B2SC)**

DATE: **October 30, 1974**

SUBJECT: **Report of Meeting with**
MALLORY CAPACITOR

REFERENCE:

TO: **FILE**

CC: **J. G. Bryant - T1J**
C. L. Clay - 1070
H. R. Ford - 1070
D. R. Mellon - 1010
W. C. Moore - 1010
R. H. Munch - T1B
C. Paton
W. R. Richard - T3F

DATE OF VISIT: **October 29, 1974 (at St. Louis)**

FOR MALLORY: **Mark Van Buskirk** } **Applicational**
Windsor Waits } **Engineering**

FOR MONSANTO: **J. G. Bryant**
R. H. Munch
D. Wood

Total Usage:	1973	1,547 M lbs.
	1974 Sept.	911
	1974 1st half	726
	1974 3rd quarter	185
	Budget 1975	1,000

Mark Van Buskirk attended the Dielectrics Seminar in St. Louis but was not able to participate in the Research/Plant tour. Since he had meetings in St. Louis with motor producers on Monday, he asked if he could meet with us and have the tour he missed. Windsor Waits is taking over from Mark as Applicational Engineer liquid capacitors. Mark is newly assigned to special projects including new PCB capacitors.

1. Non-PCB Units

Mallory position is unusual in that 10-12% of their volume is in data process power capacitors and Univac/Control Data and IBM are all actively seeking non-PCB units because of (a) exports to Japan where PCB is banned and (b) inventory production requires standardization on non-PCB units.

Univac want all non-PCB by January 1, 1975 and thus pressure is on Mallory to move ahead with MCS-1475 run.

0452656

- 2 -

2. In spite of previous experience with MCS-1588, our visitors expressed interest in repeat trials once 1475 pilot run was completed.
3. Firmly convinced that A-1016 is better as di-electric than new non-PCB fluids, and hope to see continued use in bulk of production.
4. Main areas motor run for air conditioners/general appliance motor run and data process power capacitors, estimated about 60/30/10%.

Central air conditioner market has not sagged yet but they expect downturn.

Room airconditioners are way off.

General Motor area steady.

Data process will move to non-PCB early 1975.

5. In order to familiarize myself with their organization, I asked for details (attached).

Underlined are people we should regularly meet. Dotted are contacts to be made intermittently but important.

6. Some projects may be introduced into Burlington Res in November which could be significant for us. Mark would not divulge nature but need to check him or Ed Moss early December.
7. MCS-1489 - Non-PCB has top priority now but in view of potential metallized mylar interest, MCS-1489 should be raised again January, 1975 latest.
8. 1975 budget seems high by possibly 100 M pounds. Need to re-check December, 1974 with John Cox.
9. Production cycle for a/c units starts October/November, ends about June. Note hot humid May tends to give good a/c season. If stays cool till June, they normally expect bad a/c year.


D. Wood

Attachment

0452657

Monsanto INDUSTRIAL CHEMICALS CO.

Aroclor

FROM (NAME & LOCATION): E. S. Tucker - R3B

DATE: November 6, 1974

SUBJECT: P. R. MALLORY CORPORATION - VISIT TO
DISCUSS PCB ANALYTICAL TECHNIQUES

REFERENCE: 10/29/74 Memo EST/WBP

TO: W. B. Papageorge
BIND

CC: H. S. Bergen - B2SL
R. G. Kaley - T2F
R. E. Keller - T1B ←
J. P. Mieure - T2F
R. H. Munch - T1B
W. R. Richard - T3A

As planned, on November 4, 1974 Mr. George Smith (chemist) of P. R. Mallory Corporation (3029 E. Washington St., Indianapolis, Indiana, 46206) visited our laboratories to discuss PCB analytical techniques. Mr. Smith reports to Mr. John Burney who is the Director of their Physical and Chemical Testing Laboratories. The following is a brief summary of the information exchanged and actions taken.

Mr. Smith has been working in the general area of gas chromatography for less than 1 year and has only recently begun working with electron capture detectors and PCB analysis. To date, he has run about 12 plant effluent samples (Waynesbrough, Tennessee) and only one check sample. The check sample was spiked with 5 ppm Aroclor 1016 and he found only 50% of amount added. However, his laboratory background is essentially zero (detection limit 1 ppb) and so he does not have to worry about laboratory contamination. It appears that with more experience and some guidance they should be able to accurately and precisely measure PCB levels in effluent samples.

Dr. Bob Kaley and I then reviewed in detail for Mr. Smith electron capture gas chromatography and PCB methodology.

During our discussion, he mentioned that the plant effluent samples (24 hour composites) analyzed typically contained on the order of 400 ppb Aroclor 1016. He was not sure of the plant effluent discharge rate but thought it was on the order of 30,000 gal/day which means that they would be discharging 50-60 grams of Aroclor 1016 per day. The plant effluent apparently is discharged into a municipal sewage treatment plant, but again, he was not certain of this. The discharge level of 50-60 grams per day seems low to me and is probably off by more than one order of magnitude due to the sampling technique used and the lack of experience in analyzing samples for PCBs.

He also mentioned that they were looking at carbon absorption as a means of cleaning up their plant effluent and that preliminary studies indicated that an effluent level of 5 ppb could be achieved. However, he was not directly involved in the study design. Further details can probably be obtained from Mr. Arnold S. Doty, Director Environmental Effluent Control.

0269810

W. B. Papageorge
November 6, 1974
Page No. 2

Mr. Smith requested standard samples of Aroclor 1016, Aroclor 1242, and Aroclor 1254 as well as any information that we could provide about plant effluent sampling, air sampling, and polyurethane foam adsorption of PCBs.

We will send him literature information on adsorption of PCBs with polyurethane foam and internal information, which has been previously released, on the best air sampling techniques. I indicated that I would ask you to send him the Aroclor standards and the information on plant effluent sampling.

We also updated Mr. Smith on the current status of the ASTM round robin testing of the proposed EPA PCB method (see 11-6-74 memo EST/WBP) in which they want to participate.



E. Scott Tucker

db

0269811

P. R. MALLORY CAPACITOR COMPANY VISIT TO ST. LOUIS

WEDNESDAY, MARCH 31, 1976

Visitors:

Bud Dibble, Mallory Capacitor Div., General Manager
Ron Warwick, President, Mallory Capacitor Co.
Dr. Shep Wolsky, Director, Mallory Physical Science Lab.
Dr. George Wallis, Mallory Environmental Affairs
Robert Ellis, Mallory Director of Personnel and Labor Relations.
Dr. Len Goldwater, Consultant to Mallory.

AGENDA

- March 30th 5:53 P.M. Dibble, Warwick, Ellis arrive TWA 139
Jim Alley meet and drive to The Breckenridge
Inn. Wolsky and Wallis to arrive later and
taxi to Breckenridge.
- 7:00 P.M. Jim Alley, Dave Wood to meet Dibble, Warwick,
and Ellis for dinner.
- March 31st 9:30 A.M. Jim Alley meet visitors at Breckenridge and
drive to Monsanto Headquarters. Dave
Wood/Dee Brewer meet Mallory party at Bldg.
B reception area, issue passes, and escort
to meeting room E-311.
- 10:00 A.M.-
2:30 P.M.- Medical session with Monsanto Medical, Pro-
duct Acceptability and Marketing personnel-
George Roush, Dick Osland, Cole Weber, Dave
Wood, Jim Alley (Dave Wood will kick-off
meeting.)
- 10:27 A.M. - Jim Alley will meet Eastern Flight 94 and
drive Dr. Goldwater to Monsanto Headquarters
(We should arrive at Room E 3-11 about
11:00 A.M.
- 12:30 P.M. - Lunch Monsanto Dining Room-Round Table Room-
Table reserved for visitors and available
Monsanto personnel.
- 3:00 P.M. - Mallory representatives depart for airport.

Topics To Be Discussed

Physical exams for personnel exposed to PCBs.

Frequency of physical exams.

Peak versus average exposure to PCBs.

Dioxanes formed on heating PCBs, medical effects from, what limits of dioxanes should be of concern.

Hygiene measures to prevent physical contact of personnel with PCBs.

Monsanto Medical procedures, i.e., physical exams, medical records, communication with workers exposed to PCBs, etc.

There may be additional questions related to PCB exposure which our visitors will raise.

Monsanto

FROM NAME & LOCATION: J. A. Alley-St. Louis-B2SD

DATE September 8, 1976

SUBJECT P. R. MALLORY COMPANY

REFERENCE VISIT TO MONSANTO HEADQUARTERS
TUESDAY, SEPTEMBER 14, 1976

cc: J. Mieure-T1J
O. Hicks-T2F
R. E. Hatton

TO : D. Wood

1. This memo will confirm that a meeting has been scheduled in St. Louis for Tuesday, September 14, with Roy Davidson of P. R. Mallory Company, Burlington, Massachusetts.

2. Background information:

a. Visitor

Roy Davidson, Director of Analytical Laboratory
P. R. Mallory Company
Burlington, Mass.

b. Visit was suggested by Davidson.

c. Objective cannot be achieved without a visit to St. Louis.

d. Purpose of the visit:

1) The purpose of Davidson's visit is to obtain information on methods Monsanto might recommend or discuss for detecting PCBs in effluent. Davidson said they are interested in detecting parts per billion. He said Mallory can detect to this level, but they are getting a large standard deviation. Mallory wants to improve their analytical methods so they can run larger volumes of analyses each week. They also want to improve their methods of extraction. Davidson also wants to see the equipment used by Monsanto for analytical purposes.

Davidson is involved in effluent analytical work for the Mallory capacitor plant at Waynesboro, Tenn. Waynesboro is the only Mallory plant location that uses a PCB fluid.

2) Field Sales wants to achieve:

a) Maintain a healthy, cooperative working relationship with Mallory.

0439025

-2-

3) Who does customer want to see?

a) Monsanto Research Personnel

4) Who do we want him to see?

a) Orville Hicks, Senior Research Chemist
(Jim Mieure is not available on dates of visit
and has arranged for Orville to handle the
visit.)

e. Criteria for successful visit:

He leaves with information outlined in Paragraph d.

f. What groundwork needs to be laid for the visit?

1) A phone call by Orville Hicks to Davidson is
suggested to ensure that we are prepared to cover
the appropriate technical details.

g. Entertainment

Davidson will arrive on Allegheny #163 at 6:15 P.M.
September 13. He has reservation at the Sheraton West-
port. He plans to depart St. Louis Wednesday morning,
September 15.

Orville Hicks to arrange entertainment as appropriate.

h. Sales HistoryAroclor 1016

	<u>M Lbs.</u>	<u>\$M</u>
1974	1003	295
1975	608	230
1976 YTD	835	418
1976 Budget	800	396

i. Special Note:

I expect to be making customer calls on PCB phase-out and
price increases when Davidson is here. It is suggested
that Orville Hicks prepare an agenda for the visit.

/deb

James A. Alley
James A. Alley

0439026